Fig.1

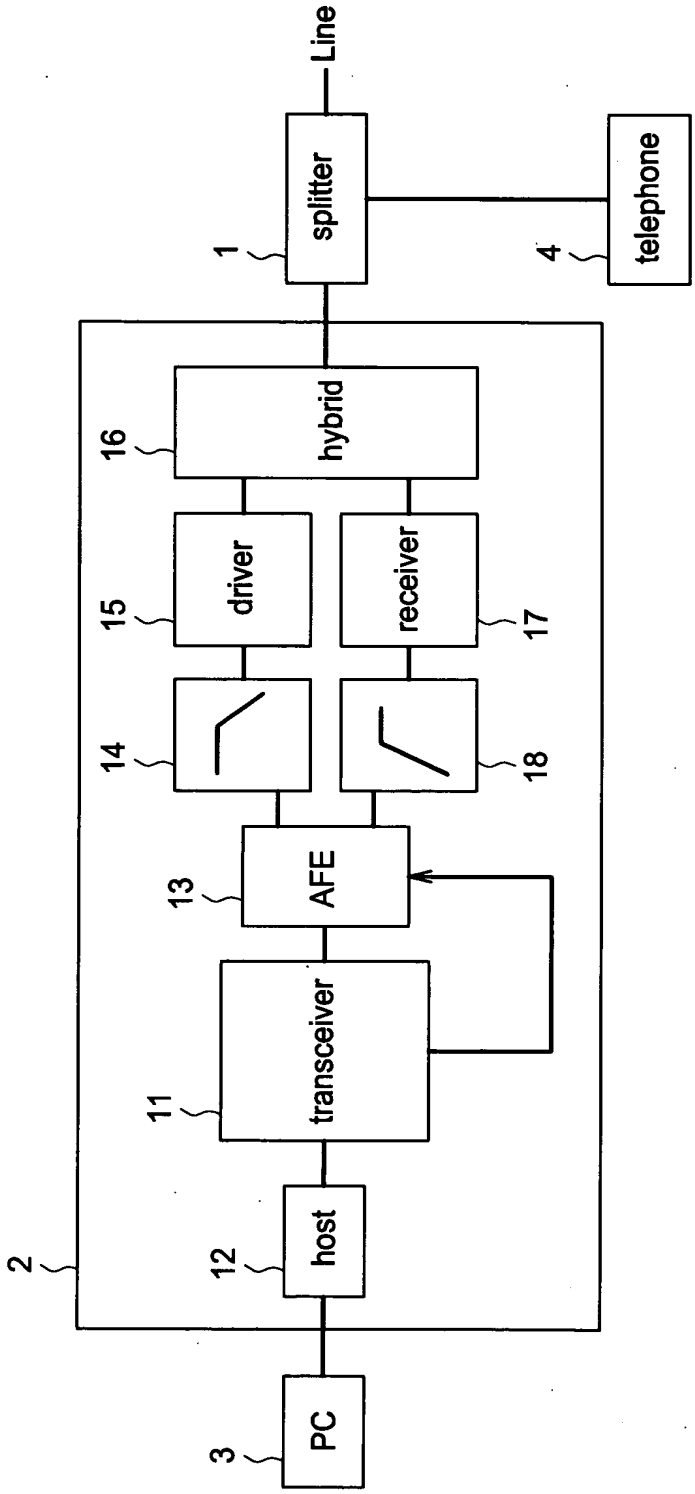
Line
splitter
telephone
1
4
hybrid
16
driver
15
receiver
17
14
18
AFE
13
transceiver
11
host
12
2
PC
3

Fig.2

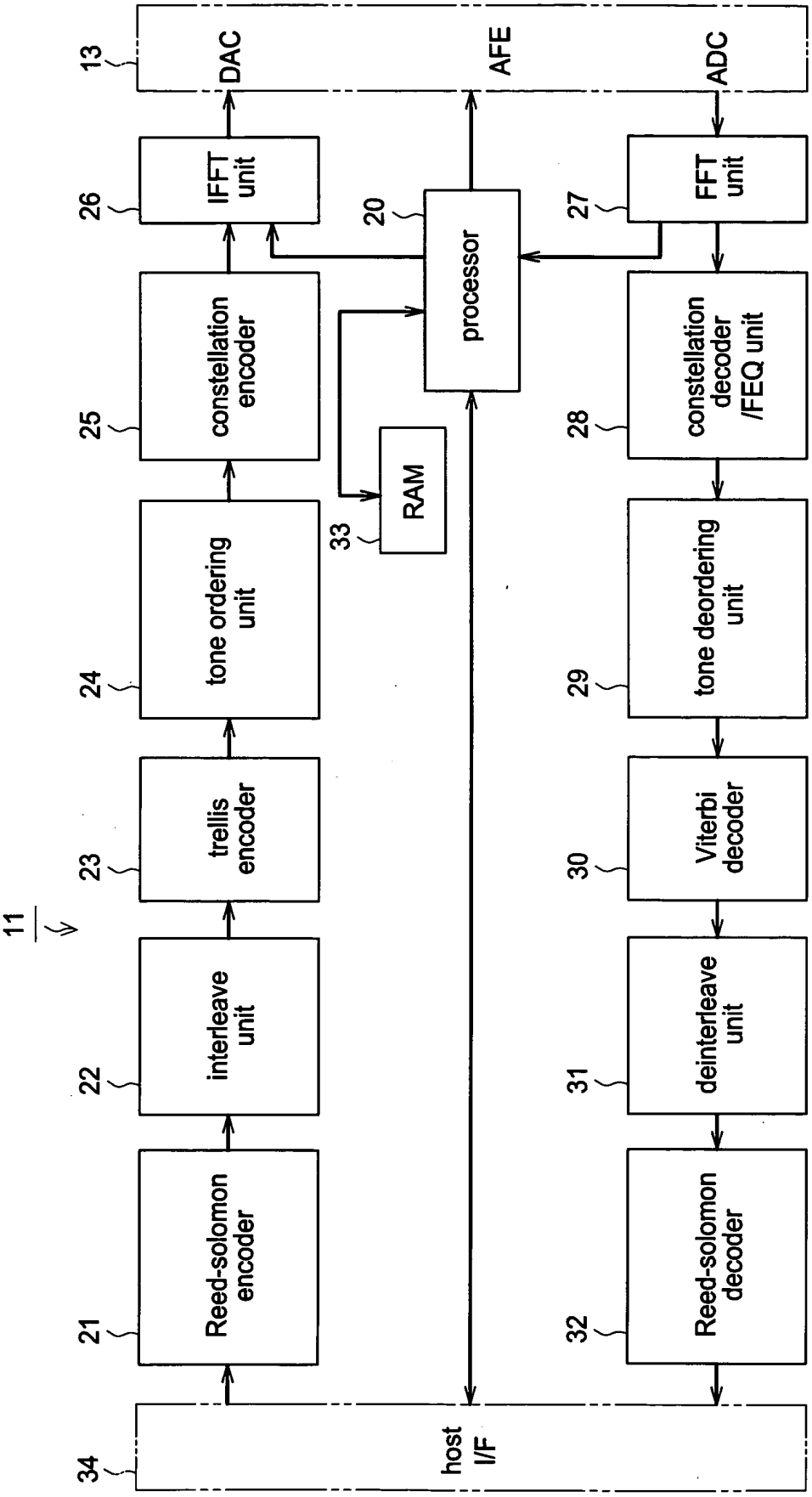
11
13
DAC
AFE
ADC
26
IFFT unit
27
FFT unit
20
processor
25
constellation encoder
28
constellation decoder /FEQ unit
33
RAM
24
tone ordering unit
29
tone deordering unit
23
trellis encoder
30
Viterbi decoder
22
interleave unit
31
deinterleave unit
21
Reed-solomon encoder
32
Reed-solomon decoder
34
host I/F

Fig.3

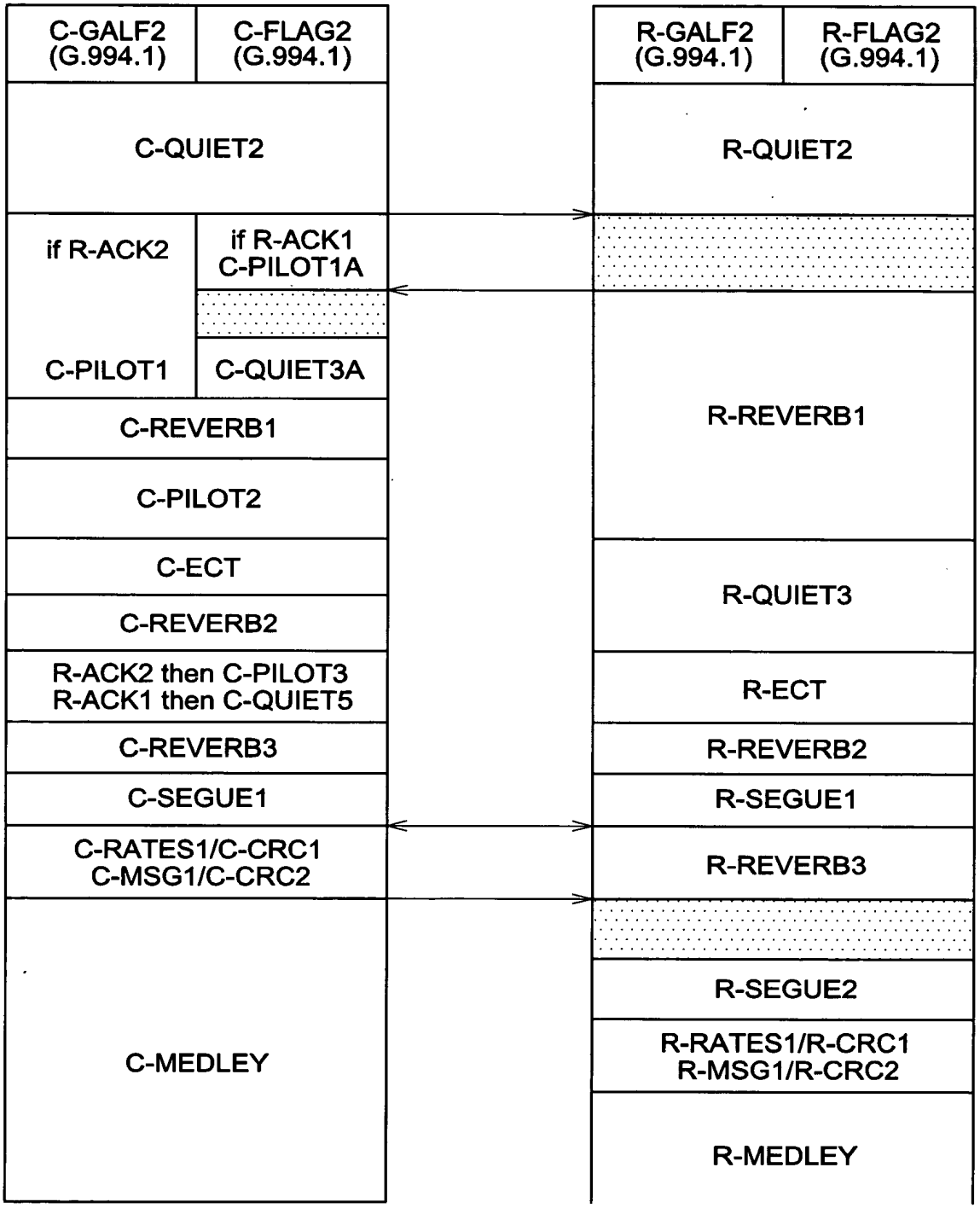
C-GALF2 (G.994.1)
C-FLAG2 (G.994.1)
C-QUIET2
if R-ACK2
if R-ACK1 C-PILOT1A
C-PILOT1
C-QUIET3A
C-REVERB1
C-PILOT2
C-ECT
C-REVERB2
R-ACK2 then C-PILOT3 R-ACK1 then C-QUIET5
C-REVERB3
C-SEGUE1
C-RATES1/C-CRC1 C-MSG1/C-CRC2
C-MEDLEY
R-GALF2 (G.994.1)
R-FLAG2 (G.994.1)
R-QUIET2
R-REVERB1
R-QUIET3
R-ECT
R-REVERB2
R-SEGUE1
R-REVERB3
R-SEGUE2
R-RATES1/R-CRC1 R-MSG1/R-CRC2
R-MEDLEY

Fig.4

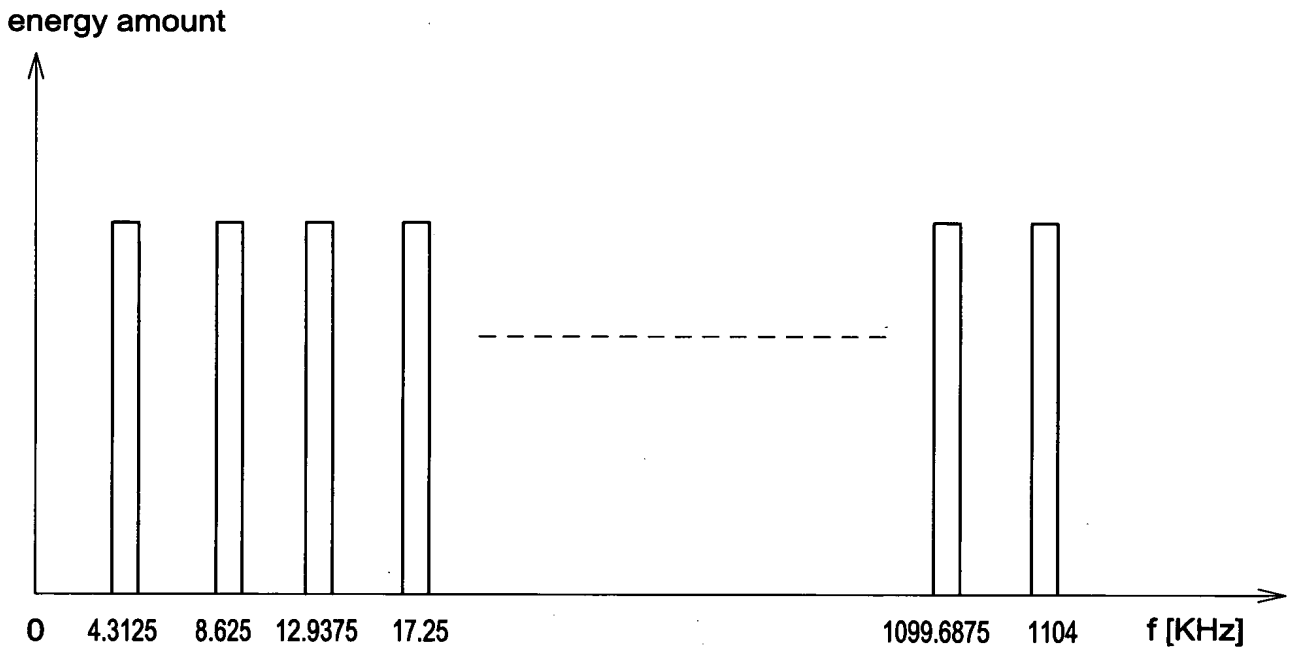

Fig.5

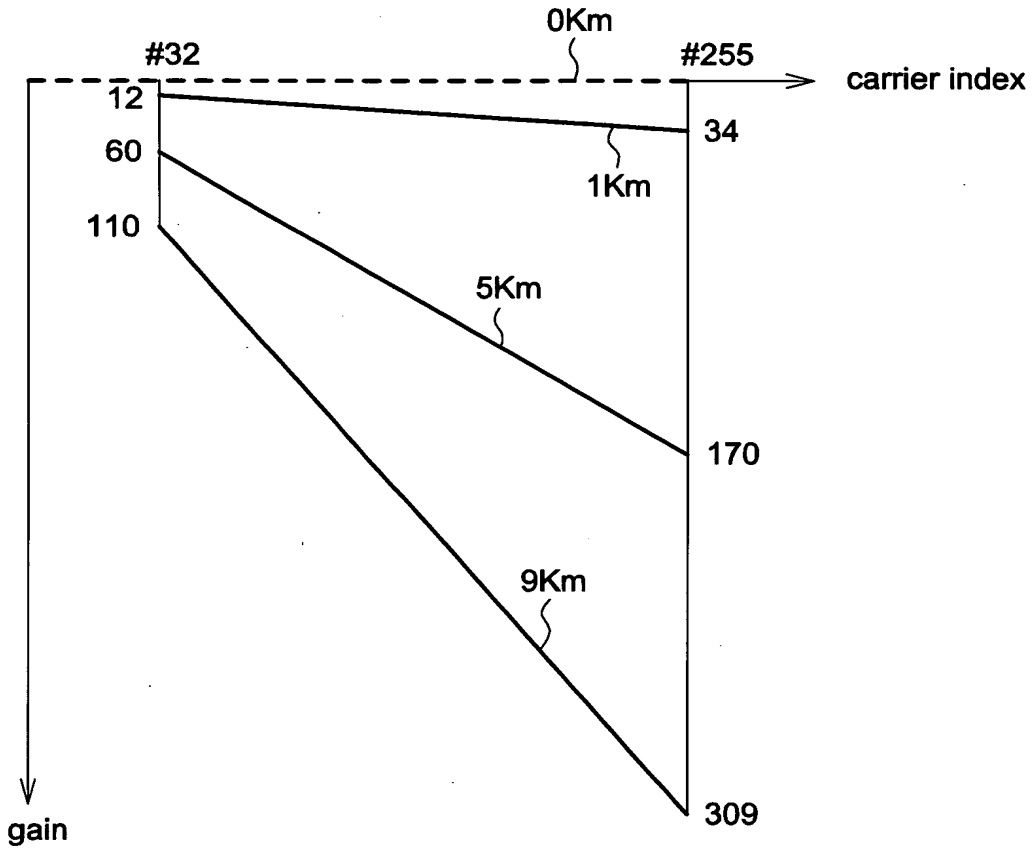

Fig.6

distance	Carrier index N (frequency=4.3125KHz x N)						
	9	17	25	32	64	128	255
1Km	-8.89dB	-10.3dB	-11.4dB	-12.2dB	-16.0dB	-22.9dB	-34.3dB
5Km	-44.5dB	-51.6dB	-56.8dB	-61.1dB	-80.2dB	-114.6dB	-171.4dB
9Km	-80.0dB	-92.9dB	-102.3dB	-110.1dB	-144.4dB	-206.3dB	-308.6dB

Fig.7

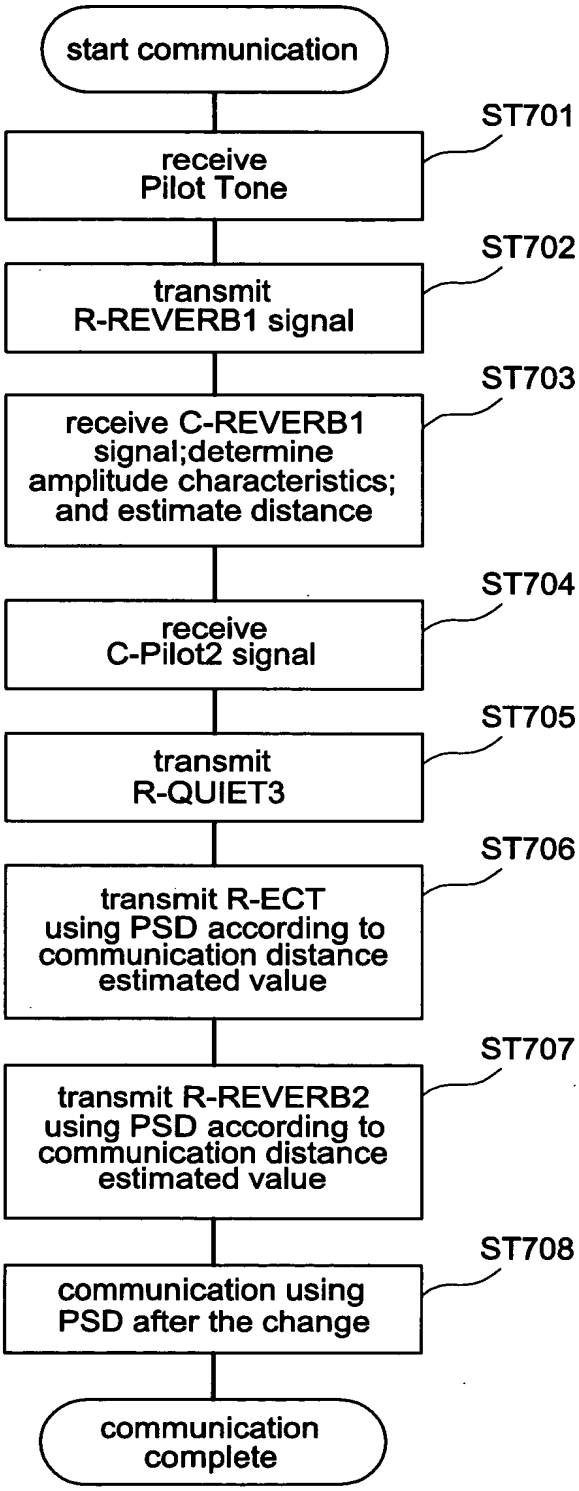
start communication
ST701
receive Pilot Tone
ST702
transmit R-REVERB1 signal
ST703
receive C-REVERB1 signal;determine amplitude characteristics; and estimate distance
ST704
receive C-Pilot2 signal
ST705
transmit R-QUIET3
ST706
transmit R-ECT using PSD according to communication distance estimated value
ST707
transmit R-REVERB2 using PSD according to communication distance estimated value
ST708
communication using PSD after the change
communication complete

Fig.8

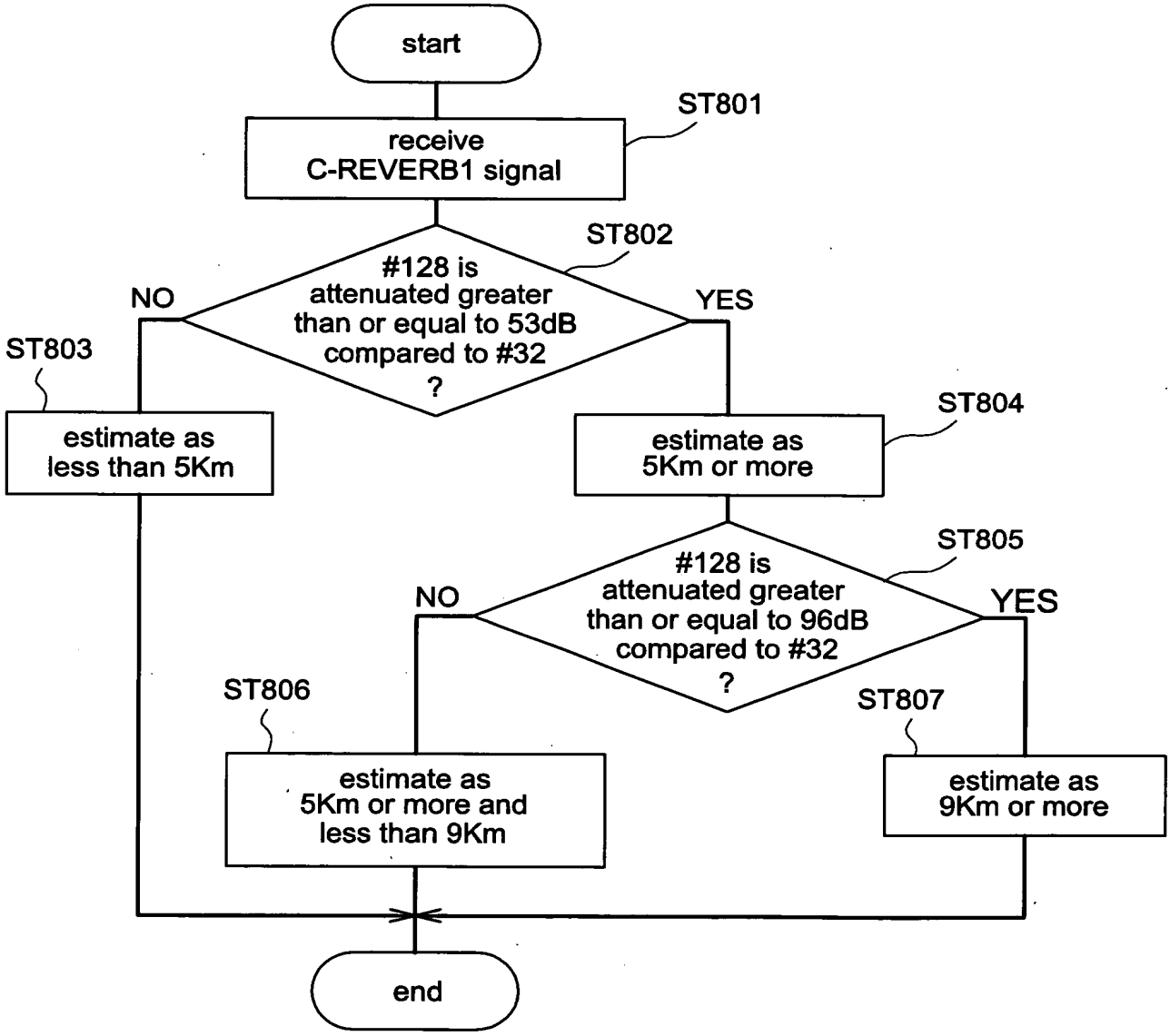
start
ST801
receive
C-REVERB1 signal
ST802
#128 is
attenuated greater
than or equal to 53dB
compared to #32
?
NO
YES
ST803
estimate as
less than 5Km
ST804
estimate as
5Km or more
ST805
#128 is
attenuated greater
than or equal to 96dB
compared to #32
?
NO
YES
ST806
estimate as
5Km or more and
less than 9Km
ST807
estimate as
9Km or more
end

Fig.9

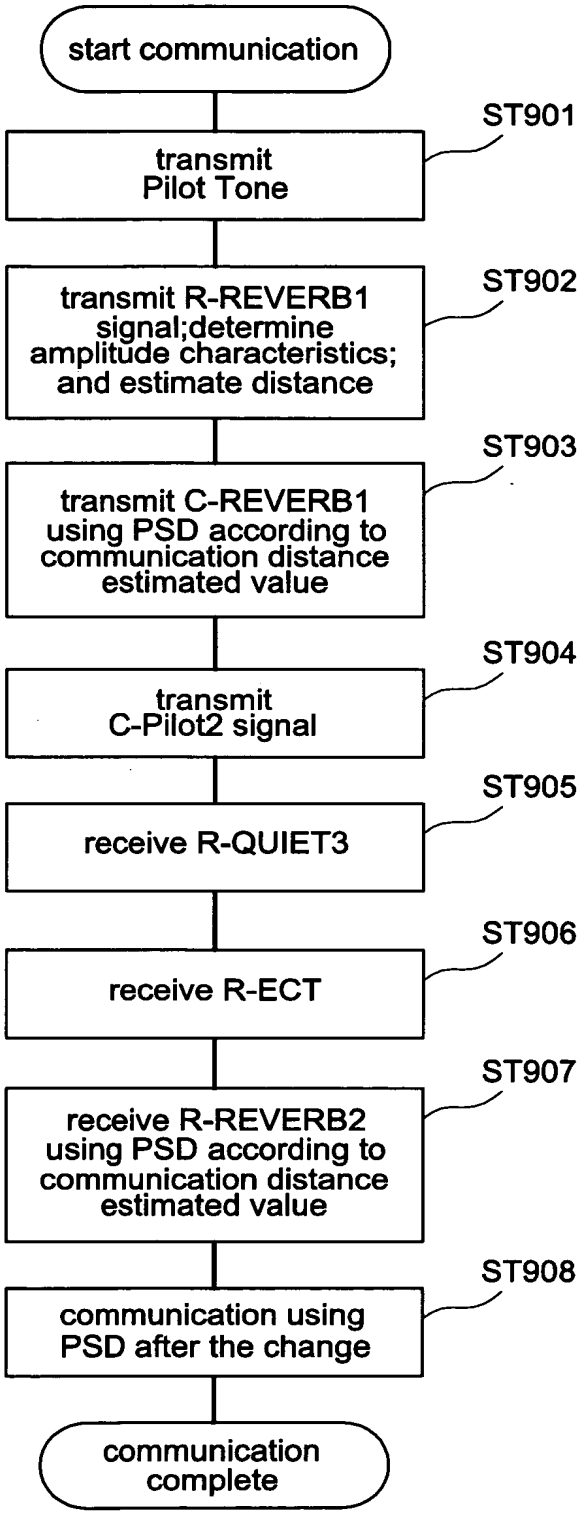
start communication
ST901
transmit Pilot Tone
ST902
transmit R-REVERB1 signal;determine amplitude characteristics; and estimate distance
ST903
transmit C-REVERB1 using PSD according to communication distance estimated value
ST904
transmit C-Pilot2 signal
ST905
receive R-QUIET3
ST906
receive R-ECT
ST907
receive R-REVERB2 using PSD according to communication distance estimated value
ST908
communication using PSD after the change
communication complete

Fig.10

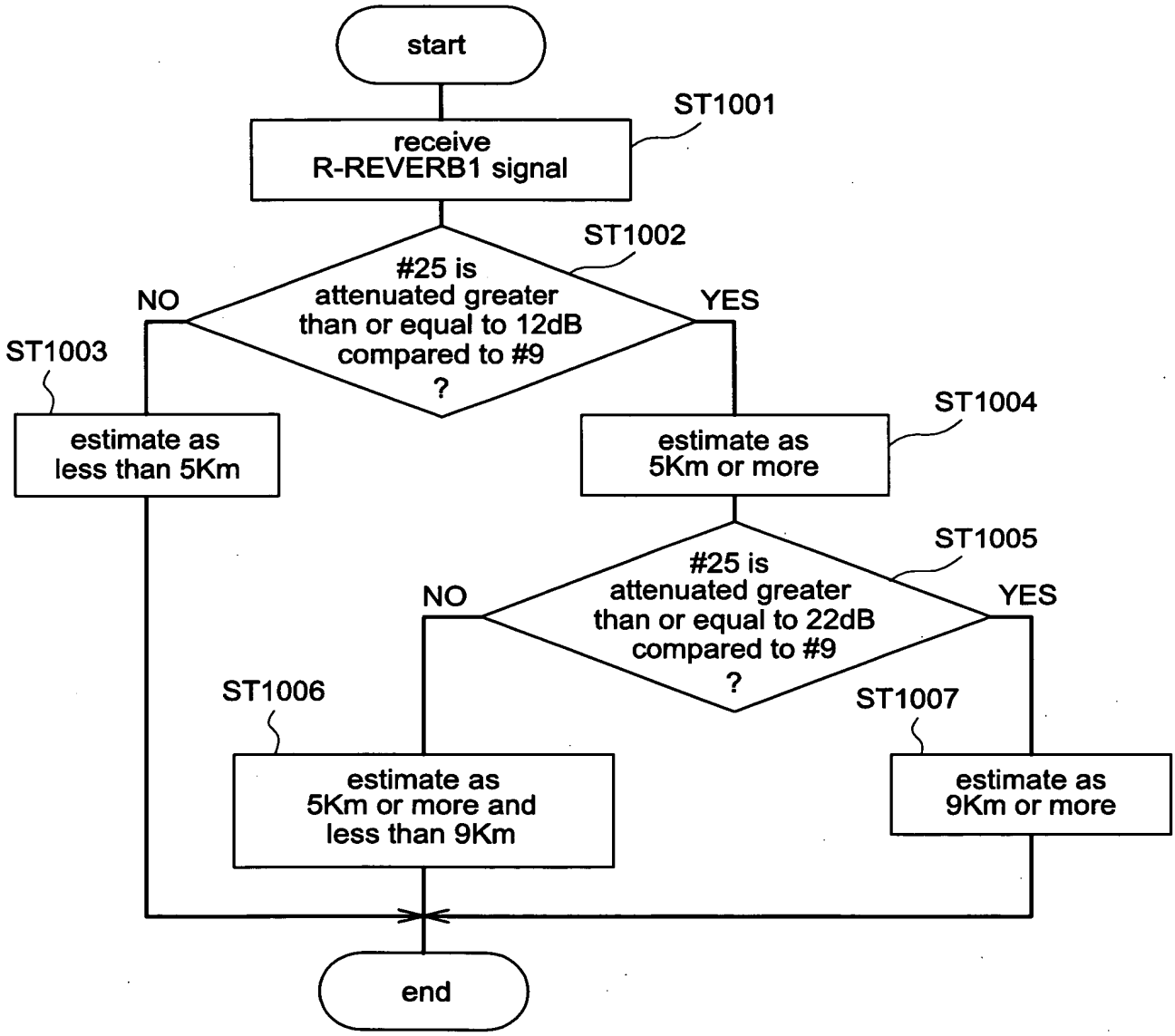
start
ST1001
receive
R-REVERB1 signal
ST1002
#25 is
attenuated greater
than or equal to 12dB
compared to #9
?
NO
YES
ST1003
estimate as
less than 5Km
ST1004
estimate as
5Km or more
ST1005
#25 is
attenuated greater
than or equal to 22dB
compared to #9
?
NO
YES
ST1006
estimate as
5Km or more and
less than 9Km
ST1007
estimate as
9Km or more
end

Fig.11

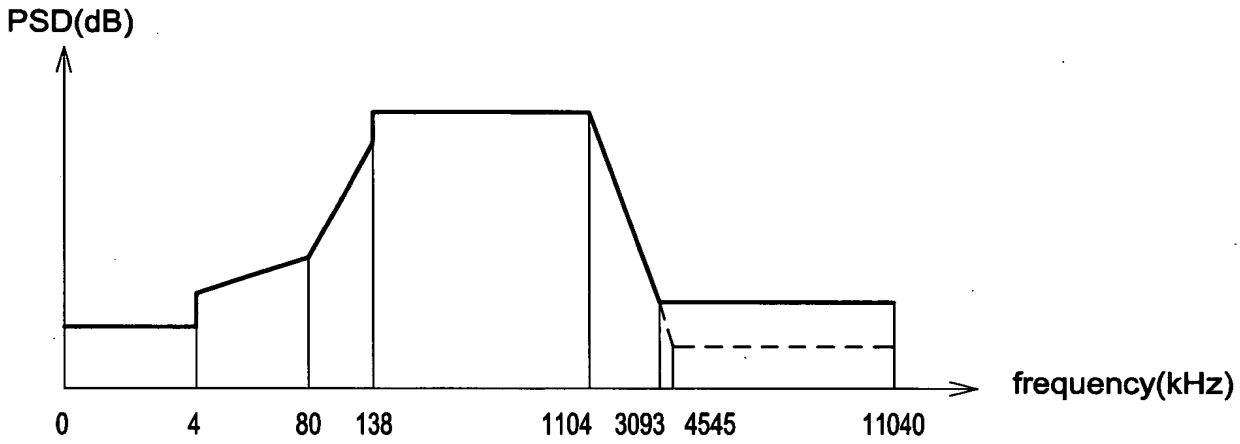
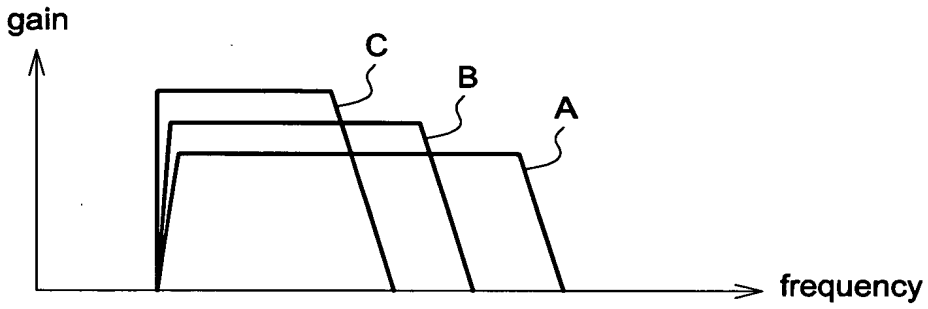
Fig.12